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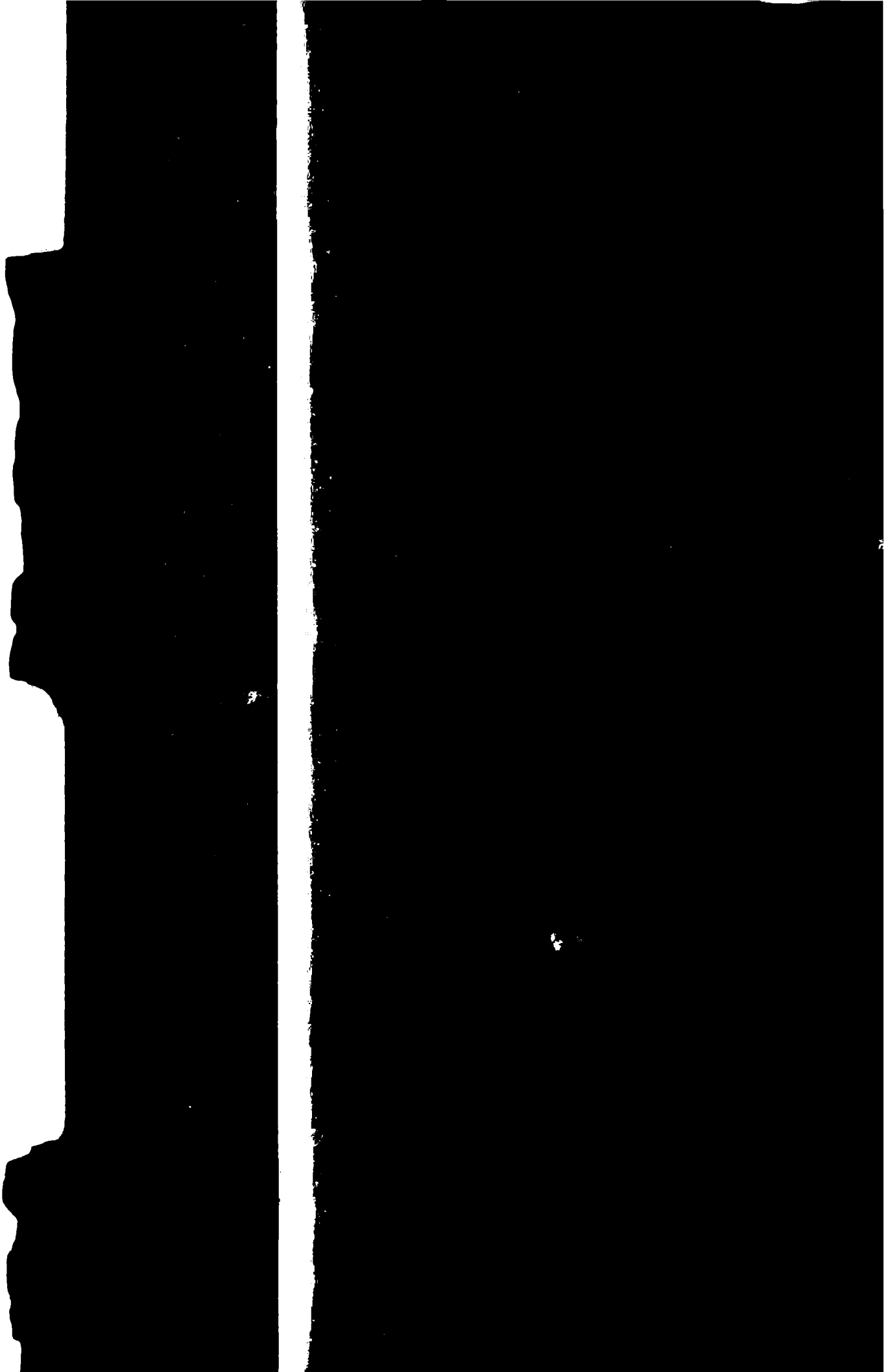
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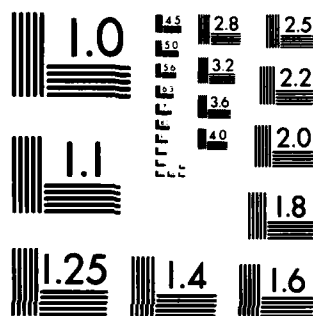
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MICROCOPY RESOLUTION TEST CHART  
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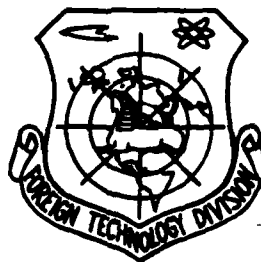
# FOREIGN TECHNOLOGY DIVISION



ON RECONNAISSANCE

By

V. Knyaz'kov



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# EDITED TRANSLATION

FTD-ID(RS)T-0551-84

22 February 1985

MICROFICHE NR: FTD-84-C-000075

ON RECONNAISSANCE

By: V. Knyaz'kov

English pages: 6

Source: Yunyy Tekhnik, Nr 9, September 1982, pp. 17-21

Country of origin: USSR

Translated by: Charles T. Ostertag, Jr.

Requester: FTD/RCA

Approved for public release; distribution unlimited.

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WP.AFB, OHIO.



# U. S. BOARD ON GEOGRAPHIC NAMES transliteration SYSTEM

Block	Italic	Transliteration	Block	Italic	Transliteration
А а	<i>А а</i>	A, a	Р р	<i>Р р</i>	R, r
Б б	<i>Б б</i>	B, b	С с	<i>С с</i>	S, s
В в	<i>В в</i>	V, v	Т т	<i>Т т</i>	T, t
Г г	<i>Г г</i>	G, g	У у	<i>У у</i>	U, u
Д д	<i>Д д</i>	D, d	Ф ф	<i>Ф ф</i>	F, f
Е е	<i>Е е</i>	Ye, ye; E, e*	Х х	<i>Х х</i>	Kh, kh
Ж ж	<i>Ж ж</i>	Zh, zh	Ц ц	<i>Ц ц</i>	Ts, ts
З з	<i>З з</i>	Z, z	Ч ч	<i>Ч ч</i>	Ch, ch
И и	<i>И и</i>	I, i	Ш ш	<i>Ш ш</i>	Sh, sh
Й й	<i>Й й</i>	Y, y	Щ щ	<i>Щ щ</i>	Shch, shch
К к	<i>К к</i>	K, k	Ъ ъ	<i>Ъ ъ</i>	"
Л л	<i>Л л</i>	L, l	Ы ы	<i>Ы ы</i>	Y, y
М м	<i>М м</i>	M, m	Ь ь	<i>Ь ь</i>	'
Н н	<i>Н н</i>	N, n	Э э	<i>Э э</i>	E, e
О о	<i>О о</i>	O, o	Ю ю	<i>Ю ю</i>	Yu, yu
П п	<i>П п</i>	P, p	Я я	<i>Я я</i>	Ya, ya

\*ye initially, after vowels, and after Ъ, ь; e elsewhere.  
When written as ё in Russian, transliterate as yě or ě.

## RUSSIAN AND ENGLISH TRIGONOMETRIC FUNCTIONS

Russian	English	Russian	English	Russian	English
sin	sin	sh	sinh	arc sh	sinh <sup>-1</sup>
cos	cos	ch	cosh	arc ch	cosh <sup>-1</sup>
tg	tan	th	tanh	arc th	tanh <sup>-1</sup>
ctg	cot	cth	coth	arc cth	coth <sup>-1</sup>
sec	sec	sch	sech	arc sch	sech <sup>-1</sup>
cosec	csc	csch	csch	arc csch	csch <sup>-1</sup>

## Russian English

rot curl  
lg log

## GRAPHICS DISCLAIMER

All figures, graphics, tables, equations, etc. merged into this translation were extracted from the best quality copy available.

## ON RECONNAISSANCE

V. Knyaz'kov, Colonel-engineer  
Drawings by Ye. Orlov

The platoon leader Lieutenant Pavel Baykov started to formulate the mission:

- Listen to the order! The "enemy" is withdrawing. The mission is to make a reconnaissance of his forces on the route of withdrawal. The platoon must follow in the direction of Hill 236, toward the bridge across the Bystraya River. Report to me about everything which is noted. My second in command is Senior Sergeant Yegovor.

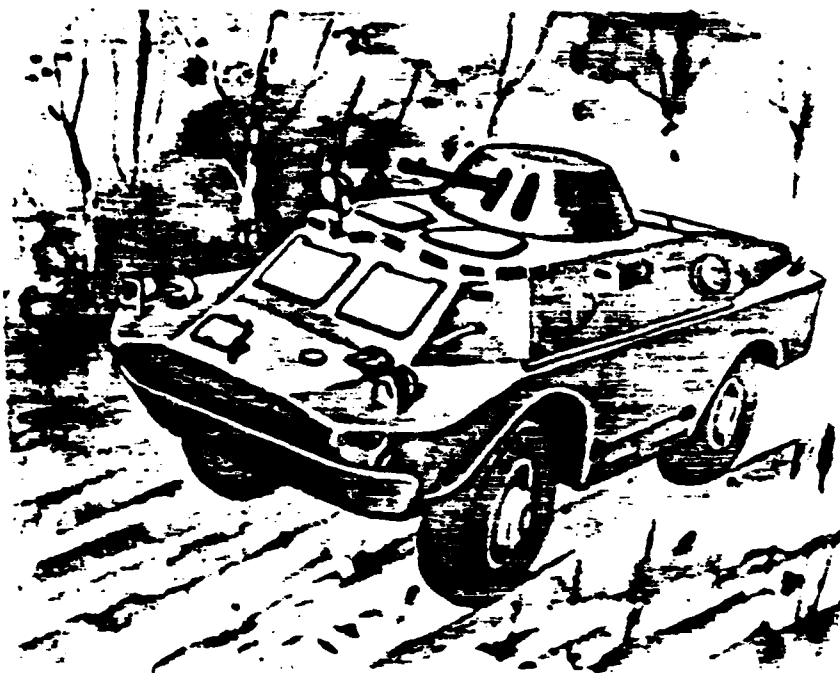
A sweep with the signal flag, and the armored vehicles, having picked up speed, were concealed behind the woods.

Since time immemorial the saying has been known: "Reconnaissance is the eyes and ears of the army."

To the modern military scouts it is not enough to hear very well and to see far off. For them new tasks and new responsibilities have appeared. Who, for example, should be the first to detect radioactive contamination of the terrain? Who at the same time has to carry out chemical reconnaissance? The military scouts.

In order that they can carry out their assigned missions successfully an armored reconnaissance-scout vehicle, has been developed - the BRDM.

The scouts just by-passed a clayey country road and moved out on an asphalt highway. And already the vehicle is rushing along at a speed of 80 km/h. But now - attention! - a turn. Here the first surprise lied in wait for the scouts. A trench across the road.



There is no bypass to the right or to the left.

But this did not disturb the driver. He put the drive lever in gear and immediately from under the "belly" of the vehicle four more wheels came down. True they were smaller in size than the main wheels. Therefore they are called supplementary. These supplementary wheels serve the purpose of permitting the BRDM to successfully overcome obstacles which are encountered on the line of march - trenches, ditches, pits.....

The designers did everything possible so that the BRDM would be such a vehicle which would not let the scouts down on the most difficult and dangerous routes.

All of its wheels have been made driving. This is particularly important when it is necessary to overcome sectors of terrain which are difficult to pass. As soon as a sharp upgrade is encountered or the vehicle ends up in difficult road conditions the driver engages the front axle. And if a particularly difficult road situation develops he switches to the lowest gear. Be assured - the vehicle does not get stuck, because in addition to the driving axles and a specialized gear box the designers have introduced still another interesting adaptation. This is a centralized system for adjusting



air pressure in the tires. The driver of the BRDM turns on a compressor and that changes the pressure in the tires. Furthermore the driver can control how much air pressure is in each tire separately.

At first glance it seems that here there is nothing really unusual: the driver pumps air into the tires or, vice versa, lets out a little... Under normal conditions the normal pressure in the tires should be equal to  $3 \text{ kgf/cm}^2$ . But here for an example the vehicle has entered a swampy sector of terrain. The driver switches on a lower gear, second as a rule, and lowers the air pressure in all the tires to  $0.5-0.75 \text{ kgf/cm}^2$ . When the pressure in the tires is lowered they as if flatten out, the area of support is increased, and consequently the magnitude of specific pressure on the ground is reduced, and naturally the cross-country performance of the vehicle is improved.

And when moving over sandy sectors it is necessary, vice versa, to increase the pressure in the tires.

And what about in winter? It is possible to traverse over fresh snow and not lower the pressure in the tires, if the depth of the snow cover does not exceed 300 mm. In this case the wheels press through the layer of snow and have good cohesion with the hard base - the frozen ground. If the depth of the snow cover is more than 300 mm, then the air pressure in the tires is reduced.

During military actions anything can happen. For example, a tire can puncture. What to do? Change the tire under enemy fire? Again the regulating system comes to assistance. Remember, the driver can control the air pressure in each tire. He switches on the compressor, which will compensate for the leakage of air in the punctured tire.

And now we will try to model a rare situation: the BRDM all the same got stuck on a sector of terrain which is almost impassable. The 90 hp engine cannot cope with the load - a swamp is tenaciously holding the five-ton vehicle.

In order to free the BRDM from such a captivity a capstan is used. In essence this is a device for pulling oneself out. In such an extreme case within the limits of the length of the cable (50 m)

a suitable tree, stump or stake is selected, and if there aren't any, then a unique anchor - a core - is fixed in the ground. A tow rope with a pulley block is secured around it and then the capstan cable is attached. And the vehicle pulls itself out.

Let us give some other characteristics of the BRDM which characterize its capabilities. The least turning radius is equal to 8 m. The greatest upgrade which the vehicle can overcome -  $30^{\circ}$ . Magnitude of list -  $25^{\circ}$ .

And there is still another characteristic which the commander always remembers - its range. For the BRDM it is 500 km. From here it is necessary to make all the calculations of mileage in scouting and reconnaissance. How much have we covered? Where and how much time remained? How many kilometers to our own forces? The arithmetic is not complex, but its value is high - the life of the crew and the reconnaissance data delivered on time to the commander.

When Lieutenant brought his vehicle to the shore there was no stop to search for a bypass. The command "forward" was given - and the vehicles one after the other slid off into the water and rolled afloat, and then they moved to the opposite shore.

Yes the BRDM is an amphibious vehicle. In the water it can develop a maximum speed up to 9 km/h. Movement is provided by hydro-jet water propulsion.

The vehicle is controlled easily when afloat with the help of water rudders, which are mounted in the housing behind a centrifugal pump. In case of necessity the vehicle can navigate in reverse. For this the driver closes the baffle of the hydro-jet engine, and then the water from the centrifugal pump is directed into the reverse tube.

The armored vehicle can be maintained afloat in its entire complexity for up to 12 h.

In a modern army reconnaissance is carried out continuously day and night. This was reflected in the technical fitting out of the BRDM. Mounted in the covers of the inspection hatches for the driver and commander are B-1 vision blocks which facilitate observation. The TVN-2 infrared device for night vision makes it possible to see at night the same as in daytime. The screening shutter of the device eliminates the blinding influence from strong sources

of light: vehicles, missiles.

Lieutenant Baykov's vehicles, camouflaged in reeds, approached the river. There is the "enemy."

Intensify observation!

After a certain time the reports were given.

West of the bridge - an emplacement, in foxholes there are three medium machine-guns!

- Reference point two, 400 further - a mortar battery!

- Reference point three, to the left 100 - a missile launcher!

Baykov extended his hand to the tumbler switch. A click, the lights of the R-113 radio set lit up. This short-wavy radio set is very convenient for military scouts - compact, reliable, and it has a range of 20 km in the microtelephone mode.

- "Second," this is "Fifteenth." A battalion of enemy on the northern bank of the Bystraya River. I will continue observation. Over.

Now it is necessary to wait for instructions from the unit commander. The scouts have accomplished their mission. And they were concealed. Secrecy of reconnaissance is one of the primary military precepts.

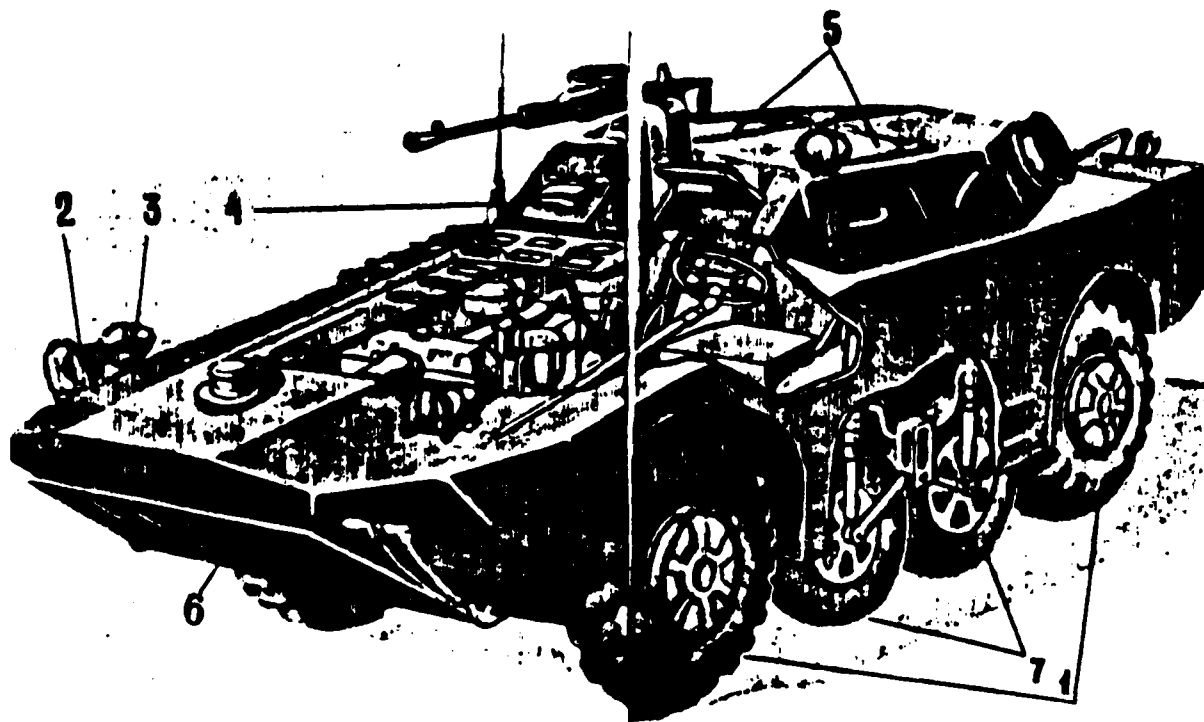
And what if they are detected all the same. For defense the BRDM has the appropriate armament. First of all this is the SGMB machine gun. Its tactical-technical characteristics: maximum sighted range is 2300 m, rate of fire - up to 700 rounds a minute. Belt feeding of rounds, 250 round in each belt. Secondly, two Kalashnikov light machine guns, nine F-1 grenades. And a 26 mm signal pistol with 21 rounds is compulsory.

The housing of the vehicle is welded from armor plates. Naturally this is not the same as a tank housing, for which special shell-proof armor is used. However, it is not accidental that the reconnaissance-scout vehicle is called armored: its housing protects the crew from bullets and fragments.

"Fifteenth," this is "Second." The mission is to move under concealment to grid square 27, come under the command of the "Third." Did you understand? Over!

- "Second," this is "Fifteenth." I understood the mission. Will do - answered Lieutenant Baykov.

The agile vehicles moved out to a forest opening and headed for the right flank of the advancing subunits.



One variant of the BRDM: 1 - driving wheels; 2 - headlamp;  
3 - infrared emitter; 4 - vision slot; 5 - landing hatches;  
6 - wave-reflecting shield; 7 - supplementary wheels.

**END**

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